

Enhanced Solvent Extraction of antioxidant compounds from different Annonaceae species

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1. Introduction – Annonaceae is a family of plants widely distributed in tropical and sub-tropical regions. It comprises about 120 genera and more than 2000 species. It is a potent source of a wide variety of bioactive compounds including acetogenins (ACGs), which are exclusively from this family. Such compounds have demonstrated antioxidant, anticancer and antibacterial activity. The classic extraction of ACGs is carried out by successive solvent extractions or by liquid/liquid partition [1]. These techniques required long extraction times, employs toxic solvents and can degrade active compounds. Enhanced Solvent Extraction (ESE) is a green alternative technique that uses subcritical mixtures of CO₂ with organic cosolvents. It is rapid and efficient. Moreover, it avoids degradation of sensitive compounds due to employs mild temperatures in absence of light and oxygen [2]. The aim of this work was to evaluate the use of ESE technique to obtain antioxidant compounds from different Annonaceae species. In addition, the effect of the type cosolvent was analyzed 2. Experimental – Leaves from *A. neosalicifolia* (1), *A. montana* (2), *A. emarginata* (3), *A. glabra* (4), *A. Cherimola* (c.v. Fino de jete (5), Campas (6) and Alboran (7)) and *A. muricata* (Guanabana) (8) were used as raw material. Extraction tests were carried out in a high-pressure equipment from Thar Technologies (Pittsburgh, USA, model SF100). CO₂+50% cosolvent (ethanol/acetone) was used at 100 bar, 80 °C, a flow rate of 10 g/min and 2 h. Results were analyzed according to the global yield and the antioxidant activity determined by DPPH assay, expressed as the antioxidant activity index (AAI) [3]. 3. Results and Discussion.

4. Conclusions – ESE shown to be a suitable technique to obtained antioxidant compounds from Annonaceae leaves. The use of ethanol as cosolvent favored the obtaining of high global yields and the recovery of antioxidant compounds. Among the evaluated Annonaceae species, *A. Cherimola* c.v. Alboran shows to be a rich source of antioxidant compounds with potent activity. 5. References [1] V.S. Biba, A. Amily, S. Sangeetha, P. Remani, Anticancer, antioxidant and antimicrobial activity of annonaceae family, *World J. Pharm. Pharm. Sci.* 3 (2014) 1595–1604. [2] M.T. Fernández-Ponce, L. Casas, C. Mantell, E.M. De La Ossa, Use of high pressure techniques to produce *Mangifera indica* L. leaf extracts enriched in potent antioxidant phenolic compounds, *Innov. Food Sci. Emerg. Technol.* 29 (2015) 94–106. doi:10.1016/j.ifset.2015.04.006.